

CLAIMS

1. A mobile communication terminal apparatus comprising:

5 a hand held phone having a function of exchanging a radio communication signal with a base station via a radio channel; and

10 a data terminal device which comprises a control unit having a control function of performing a mobile data communication with a data terminal device of a communication partner at least via said hand held phone and the base station, and a modem unit for connecting said control unit and said hand held phone and performing an interface operation for the mobile data communication under the control of said control unit,

15 wherein said hand held phone comprises received signal strength measurement means for measuring a received signal strength of a radio channel which is being received, and transferring measurement data of the received signal strength to said data terminal device, while a mode for the mobile data communication is set, and

20 said data terminal device comprises reception quality display control means for generating information representing reception quality on the basis of the measurement data of the received signal strength transferred from said hand held phone, and displaying
25 the generated information on said control unit.

2. An apparatus according to claim 1, wherein
said received signal strength measurement means has a
function of measuring the received signal strength a
plurality of number of times at predetermined time
5 intervals every unit time, and transferring the
individual measurement data to said data terminal
device, and

10 said reception quality display control means
calculates an average value of the plurality of
measurement data per unit time transferred from said
received signal strength measurement means, compares
the average value with a predetermined threshold value,
and displays the comparison result as the information
representing the reception quality on said control unit.

15 3. An apparatus according to claim 1, wherein
said received signal strength measurement means has a
function of measuring the received signal strength a
plurality of number of times at predetermined time
intervals every unit time, directly transferring the
20 measurement data to said data terminal device in the
first measurement, and transferring data representing
a difference between current measurement data and
previous measurement data to said data terminal device
in the second and subsequent measurements, and

25 said reception quality display control means
calculates an average value of measurement data per
unit time on the basis of the data transferred from

5 said received signal strength measurement means,
compares the average value with a predetermined
threshold value, and displays the comparison result as
the information representing the reception quality on
said control unit.

10 4. An apparatus according to claim 1, wherein
said received signal strength measurement means
measures the received signal strength a plurality of
number of times at predetermined time intervals every
unit time, calculates an average value of measurement
values, compares the average value with a predetermined
threshold value, and transfers the comparison result to
said data terminal device as measurement data, and

15 said reception quality display control means
displays the measurement data transferred from said
received signal strength measurement means as the
information representing the reception quality on said
control unit.

20 5. A mobile communication terminal apparatus
comprising:

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a hand held phone having a function of exchanging
a radio communication signal with a base station via a
radio channel; and

25 a data terminal device which comprises a control
unit having a control function of performing a mobile
data communication with a data terminal device of a
communication partner at least via said hand held phone

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which one

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wherein said data terminal device comprises status information transfer means for transferring status information representing its own operation state to said hand held phone while a communication mode in which said data terminal device leads connection control with said hand held phone, and

said hand held phone comprises status information display control means for displaying the status information transferred from said data terminal device on a display unit.

7. A mobile communication terminal apparatus comprising:

a hand held phone which has a function of exchanging a radio communication signal with a base station via a radio channel, and uses a battery as a power supply; and

a data terminal device which comprises a control unit having a control function of performing a mobile data communication with a data terminal device of a communication partner at least via said hand held phone and the base station, and a modem unit for connecting said control unit and said hand held phone and performing an interface operation for the mobile data communication under the control of said control unit,

wherein said hand held phone comprises battery monitoring means for monitoring a state of the battery, and transferring the monitoring data to said data

terminal device, while a mode for the mobile data communication is set, and

5 said data terminal device comprises battery information display control means for generating information representing a battery state on the basis of the monitoring data of the battery state transferred from said hand held phone, and displaying the information on a display unit of said control unit.

10 8. An apparatus according to claim 7, wherein said battery monitoring means detects a battery remaining capacity at predetermined time intervals, compares each detection value with a plurality of predetermined threshold values, and transfers information representing the comparison result to said data terminal device as the monitoring data, and

15 said battery information display control means generates information representing the battery remaining capacity on the basis of the monitoring data transferred from said hand held phone, and displays the information on said control unit.

20 9. An apparatus according to claim 7, wherein said battery monitoring means detects a battery remaining capacity at predetermined time intervals, and transfers the detection values to said data terminal device as the monitoring data, and

25 said battery information display control means compares each battery remaining capacity detection

value transferred from said hand held phone with a plurality of predetermined threshold values, generates information representing the battery remaining capacity on the basis of information representing the comparison result, and displays the information on the display unit of said control unit.

10. An apparatus according to claim 8 or 9, wherein said battery information display control means checks if the comparison result between the battery remaining capacity detection value and the plurality of threshold values corresponds to a discharge end state or a nearly discharge end state of the battery, and if it is determined that the comparison result corresponds to the discharge end state or nearly the discharge end state, said battery information display control means displays a mark indicating that the battery remaining capacity has become zero.

11. An apparatus according to claim 10, wherein said battery information display control means flickers the mark indicating that the battery remaining capacity has become zero.

12. An apparatus according to claim 7, wherein said battery information display control means generates information representing a remaining communication time of said hand held phone on the basis of the monitoring data of the battery state transferred from said hand held phone, and displays the information on

the display unit of said control unit.

13. An apparatus according to claim 7, wherein
said battery information display control means
generates information representing a consumption ratio
5 of the battery on the basis of the monitoring data of
the battery state transferred from said hand held phone,
and displays the information on the display unit of
said control unit.

14. A mobile communication terminal apparatus
10 comprising:

a hand held phone having a function of exchanging
a radio communication signal with a base station via a
radio channel; and

15 a data terminal device which comprises a control
unit having a control function of performing a mobile
data communication with a data terminal device of a
communication partner at least via said hand held phone
and the base station, and a modem unit for connecting
said control unit and said hand held phone and
20 performing an interface operation for the mobile data
communication under the control of said control unit,

wherein said hand held phone comprises means for,
when a request command associated with the mobile data
communication comes from said data terminal device,
25 directly sending back the request command as a
reception confirmation command to said data terminal
device, and

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16. A mobile communication terminal apparatus comprising:

5 a hand held phone having a function of exchanging a radio communication signal with a base station via a radio channel;

10 a data terminal device which comprises a control unit having a control function of performing a mobile data communication with a data terminal device of a communication partner at least via said hand held phone and the base station, and a modem unit for connecting said control unit and said hand held phone and performing an interface operation for the mobile data communication under the control of said control unit; and

15 transfer rate setting means for setting a transfer rate of control data to be transferred between said data terminal device and said hand held phone at a predetermined first rate while a mobile data communication execution mode is set, and setting a second rate lower than the first rate while a mobile data communication standby mode is set.

20 17. A hand held phone which is connected to a data terminal device having a predetermined communication control function required for performing a mobile data communication, and has a function of transmitting
25 transmission data of said data terminal device to a base station via a radio channel, and receiving

reception data coming from the base station via the radio channel and transferring the reception data to said data terminal device, comprising:

5 measurement means for measuring a received signal strength of a radio channel which is being received while a mode for the mobile data communication is set; and

10 transfer means for transferring the measurement data obtained by said measurement means to said data terminal device, and displaying the transferred data on a control unit of said data terminal device.

15 18. A hand held phone which is connected to a data terminal device having a predetermined communication control function required for performing a mobile data communication, and has a function of transmitting transmission data of said data terminal device to a base station via a radio channel, and receiving reception data coming from the base station via the radio channel and transferring the reception data to
20 said data terminal device, comprising:

25 status information transfer means for transferring status information representing its own operation state and displaying the transferred information on a control unit of said data terminal device while a communication mode in which said hand held phone leads connection control with the base station is set.

19. A data terminal device which comprises

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a control unit having a control function for performing a mobile data communication with a data terminal device of a communication partner via a hand held phone and a base station connected to the hand held phone via a radio channel, and a modem unit for connecting said control unit and the hand held phone, and performing an interface operation for the mobile data communication under the control of said control unit, comprising:

status information transfer means for transferring status information representing its own operation state to the hand held phone and displaying the transferred information on the hand held phone while a communication mode in which said data terminal device leads connection control of a radio channel between the hand held phone and the base station is set.

20. A hand held phone which is connected to a data terminal device having a predetermined communication control function required for performing a mobile data communication, has a function of transmitting transmission data of said data terminal device to a base station via a radio channel, and receiving reception data coming from the base station via the radio channel and transferring the reception data to said data terminal device, and comprises a battery as a power supply, comprising:

battery monitoring means for monitoring a state of the battery while a mode for the mobile data

communication is set; and

battery monitoring data transfer means for transferring the monitoring data obtained by said battery monitoring data to said data terminal device, and displaying the transferred data on said data terminal device.

21. A hand held phone which is connected to a data terminal device having a predetermined communication control function required for performing a mobile data communication, and has a function of transmitting transmission data of said data terminal device to a base station via a radio channel, and receiving reception data coming from the base station via the radio channel and transferring the reception data to said data terminal device, comprising:

power-OFF request output means for, when an operation for turning off a power supply of said hand held phone is performed while a mode for the mobile data communication is set, outputting a power-OFF request to said data terminal device; and

first power-OFF control means for, when a power-OFF instruction is sent back from said data terminal device after said power-OFF request output means outputs the power-OFF request, turning off the power supply of said hand held phone, and for, when a power-ON instruction is sent back, maintaining the power supply of said hand held phone in an ON state.

22. A hand held phone according to claim 21,
further comprising second power-OFF control means for,
when neither the power-OFF instruction nor the power-ON
instruction are sent back within a predetermined period
5 of time after the power-OFF request is output to said
data terminal device, turning off the power supply of
said hand held phone.

23. A hand held phone which is connected to a data
terminal device having a predetermined communication
10 control function required for performing a mobile data
communication, and has a function of transmitting
transmission data of the data terminal device to a base
station via a radio channel, receiving reception data
coming from the base station via the radio channel, and
15 transferring the reception data to the data terminal
device, comprising:

status information display control means for, when
status information representing an operation state of
the data terminal device is transferred from the data
20 terminal device while a communication mode in which the
data terminal device leads connection control between
said hand held phone and the base station is set,
displaying the transferred status information on a
display unit.

25 24. A hand held phone which is connected to a data
terminal device having a predetermined communication
control function required for performing a mobile data

communication, and has a function of transmitting
transmission data of the data terminal device to a base
station via a radio channel, receiving reception data
coming from the base station via the radio channel, and
5 transferring the reception data to the data terminal
device, comprising:

means for, when a request command associated with
the mobile data communication comes from the data
terminal device, directly sending back the request
10 command as a reception acknowledgment command of the
request command to the data terminal device.

25. A hand held phone which is connected to a data
terminal device having a predetermined communication
control function required for performing a mobile
15 data communication, and has a function of transmitting
transmission data of the data terminal device to a base
station via a radio channel, receiving reception data
coming from the base station via the radio channel, and
transferring the reception data to the data terminal
20 device, comprising:

first control signal reception means for receiving
a first control signal, which is generated by the data
terminal device and controls a predetermined operation
state of said hand held phone, via a dedicated signal
25 transmission path for a control signal; and

second control signal reception means for
receiving a second control signal, which is generated

by the data terminal device and is different from the first control signal, via a signal transmission path with a bus architecture.

26. A hand held phone which is connected to a data
5 terminal device having a predetermined communication control function required for performing a mobile data communication, and has a function of transmitting transmission data of the data terminal device to a base station via a radio channel, receiving reception data
10 coming from the base station via the radio channel, and transferring the reception data to the data terminal device, comprising:

transfer rate setting means for setting a transfer rate of control data to be transferred between itself
15 and the data terminal device at a predetermined first rate in a state in which an execution mode of the mobile data communication is set, and setting the transfer rate at a second rate lower than the first rate in a state in which a standby mode of the mobile
20 data communication is set.

27. A data terminal device which comprises a control unit having a control function of performing a mobile data communication with a data terminal device of a communication partner via a hand held phone and a
25 base station connected to the hand held phone via a radio channel, and a modem unit for connecting said control unit and the hand held phone and performing

reception quality display control means for, when
5 measurement data of a received signal strength is
transferred from the hand held phone, generating
information representing reception quality on the basis
of the transferred measurement data, and displaying the
information on said control unit.

status information display control means for
20 displaying status information transferred from the hand
held phone on a display unit of said control unit while
a communication mode in which the hand held phone leads
connection control between the hand held phone and the
base station is set.

29. A data terminal device which comprises a control unit having a control function of performing a mobile data communication with a data terminal device

of a communication partner via a hand held phone and a
base station connected to the hand held phone via a
radio channel, and a modem unit for connecting said
control unit and the hand held phone and performing an
5 interface operation for the mobile data communication
under the control of said control unit, comprising:

battery information display control means for,
when monitoring data representing a battery state of
the hand held phone is transferred from the hand held
10 phone, generating information representing the battery
state of the hand held phone on the basis of the
transferred monitoring data, and displaying the
information on a display unit of said control unit.

30. A data terminal device which comprises a
15 control unit having a control function of performing a
mobile data communication with a data terminal device
of a communication partner via a hand held phone and a
base station connected to the hand held phone via a
radio channel, and a modem unit for connecting said
20 control unit and the hand held phone and performing an
interface operation for the mobile data communication
under the control of said control unit, comprising:

determination means for transmitting a request
command to the hand held phone, and thereafter, deter-
25 mining if the same request command as the transmitted
request command is sent back from the hand held phone;
and

reception confirmation means for confirming, based on a determination result of said determination means, if the request command is normally received by the hand held phone.

5 31. A data terminal device which comprises a control unit having a control function of performing a mobile data communication with a data terminal device of a communication partner via a hand held phone and a base station connected to the hand held phone via a
10 radio channel, and a modem unit for connecting said control unit and the hand held phone and performing an interface operation for the mobile data communication under the control of said control unit, comprising:

15 first control signal transmission means for transmitting a first control signal for controlling a predetermined operation state of the hand held phone to the hand held phone via a dedicated first signal transmission path for a control signal; and

20 second control signal transmission means for transmitting a second control signal other than the first control signal to the hand held phone via a second signal transmission path with a bus architecture.

25 32. A data terminal device which comprises a control unit having a control function of performing a mobile data communication with a data terminal device of a communication partner via a hand held phone and a base station connected to the hand held phone via

a radio channel, and a modem unit for connecting said control unit and the hand held phone and performing an interface operation for the mobile data communication under the control of said control unit, comprising:

5 transfer rate setting means for setting a transfer rate of control data to be transferred between itself and the hand held phone at a predetermined first rate in a state in which an execution mode of the mobile data communication is set, and setting the transfer
10 rate at a second rate lower than the first rate in a state in which a standby mode of the mobile data communication is set.

33. A hand held phone for use in a radio system, wherein the hand held phone is connected with a base
15 station over radio channels, and further connected with a data terminal device having a predetermined communication control function required for performing a mobile data communication, the hand held phone
20 transmits forward data from the data terminal device to the base station over a first one of the radio channels and receives reverse data from the base station over a second one of the radio channels and transfers the received reverse data to the data terminal device, comprising:

25 measurement means for measuring a strength of the received reverse data while a mode for the mobile data communication is set;

~~control means for controlling a display unit of the data terminal device to display the transferred data.~~

34. A hand held phone for use in a radio system, wherein the hand held phone is connected with a base station over radio channels, and further connected with a data terminal device having a predetermined communication control function required for performing a mobile data communication, the hand held phone transmits forward data from the data terminal device to the base station over a first one of the radio channels and receives reverse data from the base station over a second one of the radio channels and transfers the received reverse data to the data terminal device, comprising:

status information transfer means for transferring status information representing status of the hand held phone to the data terminal device; and

control means for controlling a control unit of the terminal device to display the transferred status information while a communication mode in which the hand held phone leads connection control between the hand held phone and the base station is set.

35. A hand held phone for use in a radio system, wherein the hand held phone is connected with a base

station over radio channels, and further connected with
a data terminal device having a predetermined
communication control function required for performing
a mobile data communication, the hand held phone
5 transmits forward data from the data terminal device to
the base station over a first one of the radio channels
and receives reverse data from the base station over a
second one of the radio channels and transfers the
received reverse data to the data terminal device,
10 comprising:

receiving means for receiving status information
of the data terminal device from the data terminal
device while a mode in which the data terminal device
leads connection control between the hand held phone
15 and the base station is set; and

status display means for displaying the
transferred status.

36. A hand held phone for use in a radio system,
wherein the hand held phone is connected with a base
20 station over radio channels, and further connected with
a data terminal device having a predetermined
communication control function required for performing
a mobile data communication, the hand held phone
transmits forward data from the data terminal device to
25 the base station over a first one of the radio channels
and receives reverse data from the base station over a
second one of the radio channels and transfers the

received reverse data to the data terminal device,
comprising:

battery monitoring means for monitoring a state of
the battery;

5 transfer means for transferring the monitored
state to the data terminal device; and

causing means for causing a display of the
terminal device to display the transferred data.

37. A hand held phone for use in a radio system,
10 wherein the hand held phone is connected with a base
station over radio channels, and further connected with
a data terminal device having a predetermined
communication control function required for performing
a mobile data communication, the hand held phone
15 transmits forward data from the data terminal device to
the base station over a first one of the radio channels
and receives reverse data from the base station over a
second one of the radio channels and transfers the
received reverse data to the data terminal device,
20 comprising:

transfer rate set means for setting a transfer
rate of control data to be transferred between the hand
held phone and the data terminal device at a first rate
during a communication mode and setting a transfer rate
25 of the control data at a second rate during a standby
mode, the second rate being lower than the first rate.